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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/816,080
Filing Date: April 01, 2004
Appellant(s): MATUSZ ET AL.

Lisa K. Holthus

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 27, 2008 appealing from the Office action mailed November 27, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

The invention of the present application is assigned to Shell Oil Company, which is the real party of interest in the present appeal. The statement of the status of claims contained in the brief is correct.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 4808738 Lauritzen et al filed 02/1989

WO 95/17957 Shell filed 07/1995

US 5418202 Evans et al filed 05/1995

EP 00352850 Lauritzen et al filed 01/1990

CA 1286687 Habenschuss et al file 07/1991

CA 488990 Carlson filed 12/1952

WO 01/96324 Evans filed 12/2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lauritzen et al US 4808738 in view of Shell WO 95/17957, Evans et al US 5418202, and Lauritzen et al EP 00352850 in further view of Habenschuss et al CA 1286687, Carlson CA 488990 and Evans WO 01/96324.

Lauritzen et al US 4808738 discloses a catalyst for use in olefin epoxidation via olefin, oxygen and halide feed wherein Example 5-2 a silver containing catalyst having 0.5 mmole rhenium per kilogram catalyst. Said catalyst is described in the "Illustrative Embodiment 4" to utilize the support "carrier B", which according to Table 1 is an alpha alumina support having a B.E.T. surface area of 0.42 m²/g. By calculation, the distribution of rhenium is 0.0012 mmole/m². It follows from the Table 5, that caesium and sulfur atoms are likewise present in the

catalyst. "A promoting amount of rhenium and a promoting amount of a rhenium co-promoter selected from sulfur, molybdenum, tungsten, chromium and mixtures thereof supported on a porous, refractory support" is also part of the catalyst (cf. column 2). Lauritzen et al US 4808738 further discloses in column 3, second paragraph, that silver and rhenium are deposited on a carrier. Lauritzen et al US 4808738 still further discloses (Table 2, claim 2) the use of the above catalyst in the preparation of ethylene oxide starting from a feed mixture comprising ethylene, oxygen, chlorohydrocarbon modifier. In column 20 it is said, that the temperature is increased during the reaction, and that "during the entire test run" the feed mixture consists of 4.4 to 5.6 ppmv vinyl chloride. Given the definition of "a relative quantity Q which is maintained constant" in the present description, all of the features of independent claim 1 are disclosed in Lauritzen et al US 4808738. It is also stressed that the present definition in the claim, that "the reaction temperature is increased to at least partly reduce the effect of loss of activity of the catalyst", is a functional definition, which does not appear to support the applicant's interpretation, that the disclosed temperature increase in the prior art would not be suitable to meet the said function, namely to reduce an effect of loss of activity of the catalyst. The reference differs in that the specific relative quantity Q been disclosed.

However, Shell WO 95/17957 discloses as "Illustrative Embodiment 3" a silver containing catalyst having 1.5 mmole rhenium per kilogram catalyst. According to Table VI various alpha alumina supports have been employed. The upper limit of the BET surface area of "Alpha Alumina #1" is 1.4 m²/g. By calculation, the distribution of rhenium is 0.001 1 mmole/m². As the surface area of #2 to #3 alpha alumina is even higher, a more loose distribution of rhenium compared to that of the above-mentioned example is present in these embodiments. Further ingredients of the catalyst are caesium and sulfur atoms. "Other promoters in promoting amounts may be optionally present such as rare earths, magnesium, rhenium co-promoters selected from chromium, molybdenum, tungsten and mixture thereof" (page 3). The examples of Shell WO 95/17957 further disclose the use of the catalyst for the epoxidation of ethylene. The feed comprises also oxygen, chloro hydrocarbon modifiers of 0.3 to 20 ppmv (see Table 1). The temperature is increased during the catalytic process (see page 27). In the light of the above discussed functional definition Shell WO 95/17957 is considered to disclose in combination all features of recited claims.

Evans et al US 5418202 also teach an analogous process involving the use of a silver catalyst in a olefin epoxidation via olefin, oxygen and halide feed reaction. While Evans et al US 5418202 does not teach the Q ratio per se, Evans et al US

5418202 does disclose sufficient data and process parameters to calculate Q. see, for example, column 18 lines 42-47.

Further the above would have been particularly obvious in further view of Lauritzen et al EP 00352850 which also teach an analogous process involving the use of a silver catalyst in a olefin epoxidation via olefin, oxygen and halide feed reaction the process is operated at a level maintaining the selectivity to olefin oxide by modifying the halide level in a manner which corresponds to the Q ratio recited in the claims. see, for example, page 2 lines 37-45 noting also the general process in lines 4-24.

In view of the above it would have been obvious to modify Lauritzen et al US 4808738 to obtain the process parameters recited as the results, the use of somewhat different but otherwise analogous starting materials in an otherwise known process would not have been unexpected and therefore obvious.

(10) Response to Argument

Applicants argue 1) that the references do not teach that there is a loss of catalyst activity and that the reaction temperature is raised to at least partly reduce the loss of activity. Applicants also argue 2) that the art teach teaches only increasing the amount of halohydrocarbon as opposed to maintaining the relative

quantity of halohydrocarbon. Lastly applicants argue 3) that rhodium is not present in the prior art catalyst within the recited range.

As to 1) above, it is noted that it is well recognized that “reaction systems generally deactivate over time, i.e., the activity of the catalyst begins to decrease as the process is carried out.” To overcome this it is known increase the temperature of the reaction at a rate to maintain a given activity. See Habenschuss et al CA 1286687 page 6 last paragraph and page 7 first paragraph. See also Carlson CA 488990 page 4 lines 18-24. To apply this well-known technique to an otherwise known process would have been obvious as the results would not have been unexpected.

As to 2) above, it is noted that halohydrocarbons, e.g., chlorohydrocarbon are well-known as moderators for catalysts used in olefin epoxidation processes corresponding to those recited in the claims. See, for example. Evans WO 01/96324 page 8 lines 11-21. It is also noted that Evans teaches continuously adjusting the chlorohydrocarbon during the reaction to maintain a certain activity level. The same is also taught by Carlson CA 488990. See page 4 lines 10-12.

As to 3) above rhodium corresponding to that recited in the claims was noted in the previous office action. Catalyst containing a rhodium component in the recited

amounts with a support corresponding to the type recited in the claims would inherently have the claimed surface area ratio.

Notwithstanding the above, it would have been obvious, particularly in light of KSR International Co. v. Teleflex Inc. (550 U.S. ___, No. 04-1350, decided April 30, 2007), to use somewhat different both otherwise analogous process parameters, such as temperature and halogen content relative to starting material, in an otherwise known olefin catalytic epoxidation process in order to optimize an outcome known to be desired in the prior art, i.e. catalyst activity, reaction times, product output or purity.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Raymond Covington/

Examiner, Art Unit 1625

Conferees:

/Janet L. Andres/

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Supervisory Patent Examiner, Art Unit 1625

/James Wilson/

Supervisory Patent Examiner, Art Unit 1624